



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

KURATA et al.

Group Art Unit: 1711

Application No. 10/026,805

Examiner: Sanza L. McClendon

Filed: December 27, 2001

For: PELLICLE, PRODUCING METHOD THEREOF AND ADHESIVE

DECLARATION UNDER 37 C.F.R. §1.132

Honorable Commissioner of Patents and Trademarks

Alexandria, VA 22313-1450

Sir:

I, Shigeto Shigematsu, do declare and state as follows:

I graduated from Kyushu University with a Master's Degree in Engineering, Department of Electronics in March 1988;

I joined Mitsui Petrochemical Industries, Ltd. (currently Mitsui Chemicals, Inc.) in April 1988, and from 1988 to 1991, I was engaged in development of next-generation optical discs at the Electronic & Engineered Materials Laboratory. From 1991 to 1996, I was engaged in research and development of amorphous magnetic materials. Since 1996, I have been engaged in development of next-generation pellicles in the Pellicle Division at Iwakuni-Ohtake Works;

I am familiar with the Office Action of March 21, 2006, and understand that the Examiner has rejected the claims under 35 U.S.C.

§103(a).

The following additional comparative experiments were carried out by me or under my supervision in order to make the advantages of the subject matter more clear.

Experiment A

(Preparation of a Pellicle Film)

A 6-wt % solution was prepared by dissolving a completely-fluorinated fluorine-containing resin having cyclic perfluoroether groups, CYTOP (trade name, manufactured by Asahi Glass Company) in a fluorine-containing solvent, IL-263 (perfluorotrialkylamine (chemical formula: $(C_nF_{2n+1})_3N$) manufactured by Tokuyama Corp. trade name) and then a thin film of 0.8 μm in thickness was formed using a spin coat method.

(Preparation of Adhesive)

The following liquids A and B were prepared in accordance with Example 1 of Japanese Patent Application Laid-Open (JP-A) No. 3-163182 (Yagi).

Liquid A: G801/MMA/BPO = 1/1/0.02 (parts by weight)

Liquid B: G801/MMA/DMPT = 1/1/0.02 (parts by weight)

G801 represents DAI-EL G801 (iodine-containing vinylidene fluoride-based elastic copolymer manufactured by Daikin Industries, Ltd.), MMA represents methyl methacrylate, BPO represents benzoyl peroxide, and DMPT represents dimethyl-p-toluidine.

(Preparation of Pellicles)

The above liquids A and B were mixed in a ratio of 1:1 (by weight). Onto an

adhesion surface of a pellicle frame (149 mm in length, 122 mm in breadth, 5.8 mm in height and 2 mm in width) made of an aluminum alloy, the mixture was immediately applied. Immediately thereafter, the pellicle film prepared above was adhered to the adhesion surface, and was allowed to stand for an hour. Then, the excessive film outside the pellicle frame was cut away with a cutter, so that a pellicle was prepared.

(Evaluation of Adhesion Strength of Pellicle Film)

Evaluation (outer blow evaluation—on the front face) was conducted by using a needle 1.0 mm ϕ in outer diameter and 0.65 mm ϕ in inner diameter and blowing air, at a speed of about 2 mm/second, from a position 10 mm away from the front face of the pellicle film, at an angle of 65°, along the inside of the pellicle frame having the pellicle film adhered thereon. This evaluates whether the pellicle film has peeled or not. In the same manner, evaluation (inner blow evaluation—on the rear face) was conducted by blowing air at a speed of about 2mm/second, from a position 10 mm away from the rear face of the pellicle film, at an angle of 45°, along the inside of the pellicle frame having the pellicle film adhered thereon. This evaluates whether the pellicle film has peeled or not. In the specification of the present application, the outer blow evaluation and the inner blow evaluation are conducted in the same manner at an air pressure of 0.20 MPa.

In the evaluation, the pressure of the air to be applied was increased sequentially, and the air pressure at which the pellicle film peels was confirmed. The adhesion strength of the adhesive according to the present invention and the adhesive disclosed in Yagi was quantitatively expressed by the evaluation. The results are shown in Table A below.

In the specification of the present application, it is shown that the adhesives (samples 1 to 28) according to the present invention having various compositions all exhibit no peeling at an air pressure of 0.20 MPa (see Tables 1 to 3 of the specification of the present application). In contrast, as is clear from Table A below, peeling of the pellicle film occurred at significantly lower air pressures when the adhesive of Yagi was used. Accordingly, it was demonstrated that the adhesive according to the invention showed unexpectedly superior adhesion property than the adhesive of Yagi when used for adhering a pellicle film to a pellicle frame.

Table A

Evaluation Method	Applied Air Pressure (MPa)					
	0.10	0.12	0.14	0.16	0.18	0.20
Outer Blow Method	A	A	A	B	—	—
Inner Blow Method	A	A	B	—	—	—

A: Peeling of the pellicle film did not occur.

B: Peeling of the pellicle film occurred.

—: Not tested.

Conclusions

The present invention showed unexpectedly greater improvements in the adhesion property of the pellicle film to the pellicle frame.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

DATE: 5/26/2006

Shigeto Shigematsu

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